

Arent Fox

September 23, 2008

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, S.W.
Washington, D.C. 20554

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RE: MD Docket No. 08-65, RM-11312

Dear Ms. Dortch:

This proceeding will determine whether the United States will retain a leadership role, and remain extremely competitive, in numerous critical scientific fields, or whether its role will be greatly diminished, to the tremendous detriment of the citizens of the United States and its scientific community.

Internet2 is a National Research and Education Network ("NREN"). NRENs are noncommercial entities that, among other things, operate international bearer circuits for the research and education community, which community includes colleges and universities, research laboratories, research hospitals, government laboratories, museums and libraries.¹

While the vast majority of international bearer circuits are used for commercial purposes, a very small number of international bearer circuits² are utilized for the purpose of interconnecting NRENs ("Research and Education Circuits").³ The scientific community relies heavily on high-performance computing and communications, and the Research and Education Circuits are critical components of the infrastructure that supports cutting edge science in all of the following fields: physics, medicine, computer science, bioinformatics, biodiversity and ecological research, geoscience, astronomy and space exploration.

Currently, the U.S. is a leader in each of these areas of science, and is also very competitive in each such area. But the U.S. can retain these roles only if its scientists can continue to heavily depend upon data flows from devices, sensors and instruments all around the world, which data is brought to their laboratories by the Research and Education Circuits. In light of the heavy reliance by NRENs on Research and Education Circuits, the United State's leadership role – and, indeed, the United States' competitiveness in general -- with respect to all of these areas will be greatly jeopardized if the number of Research and Education Circuits decreases. Without a doubt, a decline in Research and Education Circuits would undermine the efforts of the United

¹ NRENs also operate domestic circuits for the research and education community.

² Currently, there are approximately only twenty 10 Gbps Research and Education Circuits.

³ Research and Education Circuits are leased, sold on an IRU basis, or otherwise procured by NRENs or by individual educational institutions for the purpose of interconnecting NRENs.

States, and the global scientific community, in each and every one of these fields. It would also place U.S. interests behind those of other countries in these areas.

Yet, the number of Research and Education Circuits will almost certainly decline if, for those circuits, carriers pass-through (whether expressly or implicitly) their international bearer circuit regulatory fees, rendering Research and Education Circuits unaffordable. Until recently, carriers interpreted the Commission's regulations concerning international bearer circuit fees as only applicable to voice circuits, and therefore did not charge such regulatory fees for Research and Education Circuits. Now it has become apparent that such regulatory fees do apply to data networks as well, and therefore to Research and Education Circuits unless the regulations are modified. Accordingly, it is critical that those regulatory fees do not apply to the small number of Research and Education Circuits for the reasons articulated above. Indeed, when a carrier recently sought to charge regulatory fees for Research and Education Circuits, the NREN cancelled its request for such circuits from that carrier.

Internet2 recognizes that in this proceeding the Commission will determine whether to continue to charge regulatory fees based on the capacity of the cable ("Capacity Based Fee"), or whether to modify its approach and charge regulatory fees based on a flat fee per system ("Flat Fee"). Internet2 does not take a position as to which is the appropriate approach on this general issue (i.e., Capacity Based Fee or Flat Fee). What is critical here, however, for the citizens of the United States, its scientific community, and to ensure that this country retain a leadership role, and remain extremely competitive, in each of the areas of science discussed above is the following: **That regardless of the general approach taken by the Commission (Capacity Based Fee or Flat Fee), the Commission should ensure that for the relatively few Research and Education Circuits, international bearer circuit fees are not imposed by the Commission or directly or indirectly charged by carriers (i.e., through express or implicit pass-throughs).** In that regard,

- *If the Commission Retains its Capacity Based Fee Approach* -- If the Commission continues to charge international bearer circuit regulatory fees based on capacity, it should modify the regulations in the following manner: **For the small number of Research and Education Circuits, carriers should not be required to pay international bearer circuit fees.** Thus, for terrestrial circuits, for example, where it appears the Commission may continue with its Capacity Based Fee approach, carriers should not be required to pay international bearer circuit fees with regard to Research and Education Circuits.
- *If the Commission Adopts a Flat Fee Approach* -- If the Commission modifies its regulatory fee approach to charge a flat per-system fee, as it appears it may do with regard to undersea cable, the Commission should rule as follows:
 1. **For each system that is utilized at least in part for Research and Education Circuits, such system owner would receive a reduction in its IBC flat per-system fee equal to the lesser of (i) \$20,000 or (ii) \$400,000 divided by the total number**

of system owners receiving a deduction. To ensure that the Commission is made whole with respect to the collection of its regulatory fees, the Commission would then take into account the maximum total aggregate deductions of \$400,000 referenced above when determining the general flat per-system fee. Therefore, the flat per system fee for each system would be increased (from what it otherwise would be) by at most the following: \$400,000 divided by the total number of systems (with the systems receiving reductions having their flat per system fee then reduced by the amount of the reduction).

Such reductions would give system owners an incentive to pass on their regulatory fee savings in connection with their provision of Research and Education Circuits, and thereby help to ensure that the Research and Education Circuits remain affordable. To ensure that there are no false representations from carriers concerning such deductions, the NREN community itself would file a report with the Commission each year indicating from which systems they are receiving Research and Education Circuits.

2. Prohibit carriers from passing through (whether expressly or implicitly) any regulatory fees relating to the Research and Education Circuits.

Such modifications are undoubtedly necessary. Indeed, by way of example only, the U.S. role in each of the following matters/projects will be greatly reduced if there is a decline in the number of Research and Education Circuits:

- LHC (The Large Hadron Collider), which is located in Geneva, Switzerland at CERN, is the world's largest and highest energy particle accelerator. More than 2,500 U.S. physicists will depend upon data from the LHC to conduct their research over the next two decades, which research will be greatly undermined if the number of Research and Education Circuits decline. That is, the data files that U.S. physicists need to transfer from the LHC to their U.S. laboratories are on the order of petabytes (which is 1 million gigabytes), and therefore the Research and Education Circuits must be used for these communications. The LHC is designed to help resolve many fundamental questions about the origins of the universe and the nature of matter, which research will help uncover new energy sources, develop new materials for numerous industries, and help us better understand the global environment of our planet.
- LIGO (Laser Interferometer Gravitational-Wave Observatory) is a global experiment on finding gravitational waves, which will increase our understanding of the fundamental properties of matter, thereby also helping uncover new energy sources, develop new materials in a variety of industries, and better understand the global environment of our planet.
- ITER (The International Thermonuclear Experimental Reactor) in Southern France is at the cutting edge of trying to harness nuclear fusion, and will provide similar benefits to

Marlene H. Dortch, Secretary
Federal Communications Commission

those of LHC and LIGO. The LHC and LIGO are attempting to verify predicted properties of matter, and ITER is even much closer to bringing fusion into practical production. Loss of data from ITER, therefore, could have an immediate and devastating impact on American fusion energy research.

- GENIUS (Grid Enabled Neurosurgical Imaging Using Simulation) is a project to use an array of high performance computers connected by advance networks to simulate blood flow into and from the heart to better understand cardiovascular disease, so as to reduce cardiovascular disease and deaths.
- BRIITE (Biomedical Research Institutions Information Technology Exchange) is a project involving very important cancer research that requires significant use of the Research and Education Circuits.
- GLORIAD (Global Ring Network for Advanced Applications Development) is built on a fiber-optic ring of networks around the northern hemisphere connecting numerous countries, including the U.S., Russia and China, to promote increased engagement and cooperation between countries on a wide variety of issues including (i) strengthening current programs in nuclear weapons disposal, nuclear materials protection, and combating terrorist threats; (ii) supporting technologies to provide virtually limitless supplies of energy; (iii) new telemedicine applications; and (iv) improved weather forecasting and earthquake prediction.
- The e-VLBI (Electronic Very Long Baseline Interferometry) is an array of radio telescopes spread around the globe, which conduct unique high resolution, radio astronomical observations of cosmic radio sources. The e-VLBI provides astronomers with their best view of the most energetic phenomena in the universe, including expanding supernovae, pulsars, flare stars, and the environment surrounding nearby and distant galaxies. These telescopes provide astronomers with the ability to, in effect, use the entire planet as a telescope with remarkable resolution that enables astronomers to observe and predict important trends that affect residents of all nations.

This letter is being electronically filed with the Commission.

Please do not hesitate to contact the undersigned with any questions that may arise with respect to this filing.

Respectfully submitted,

A handwritten signature in black ink that reads "Alan G. Fishel" followed by a stylized monogram or initials.

Alan G. Fishel

Attorney for Internet2

Page 5

Marlene H. Dortch, Secretary
Federal Communications Commission

cc: Rick Chessen
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